

In re Patent Application of:
ARENA ET AL.
Serial No. 09/929,833
Filed: **AUGUST 14, 2001**

Amendments to the Drawings:

Replacement sheets 1-5 are submitted to replace original drawings sheets 1-5. Original drawing sheets 1-5 included Figs. 1-12 and the replacement sheets include replacement Figs. 1-12. The replacement sheets include amendments to Figs. 2 and 7 that provide suitable legends for each amended figure as requested by the Examiner.

Attachment: Replacement Sheets

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REMARKS

Applicants would like to thank the Examiner for the thorough examination of the present application, for allowing Claims 50-65, and for identifying allowable subject matter in Claims 35-37 and 45. New Claims 66 and 67 have been added and are based on the allowable subject matter of Claims 37 and 45, respectively. Accordingly, Claims 37 and 45 are canceled. In addition Claims 35 and 36 have been canceled to overcome the duplicate claims rejection.

The patentability of the claims is discussed in greater detail below. Favorable reconsideration is respectfully requested.

I. The Claimed Invention

Independent Claim 20 is directed to a system for the analysis of an image of a DNA microarray including an array of spots. The system includes a sensor for acquiring signals corresponding to the image of the DNA microarray, and a cellular neural network (CNN) circuit to process the signals from the sensor. Independent Claim 46 is a method counterpart of Claim 20.

Independent Claim 42 is directed to a system for the analysis of an image of a DNA microarray. The system includes a sensor for acquiring analog signals corresponding to the image of the DNA microarray, and a cellular neural network circuit for parallel processing the analog signals from the sensor.

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II. Claims 20-32, 34, 38-44 and 46-49 Are Patentable

The Examiner rejected independent Claims 20, 42, and 46 as unpatentable over the Shams et al. patent in view of the Chua et al. patent. The Shams et al. patent discloses a scanner for scanning a microarray of DNA material to produce a digital image of the DNA material. The Examiner correctly recognized that the Shams et al. patent fails to disclose a cellular neural network as the processor for the DNA material image, but cites the Chua et al. patent as disclosing a cellular neural network for processing the digital image data produced by the sensor of the Shams et al. patent.

The Examiner asserts the motivation for the proposed combination is to provide high speed, highly accurate image analysis results. Applicants believe the Examiner's proposed combination would introduce undesired delays and thereby fail to provide high speed image analysis. For example, the Shams et al. patent teaches that the analog signal of the object being imaged has to be converted into a digital signal, and then this digital signal has to be converted back to an analog signal for use in accordance with the teachings of the Chua et al. patent. Consequently, the time delays imparted by the proposed combination may fail to provide high speed image analysis results.

In addition, the proposed combination may fail to provide highly accurate image analysis results because the required multiple conversions of the original image signal may corrupt the image analysis results. For instance, the conversion of the analog image signal to a digital signal using the teachings of the Shams et al. patent may result in

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inaccurate image analysis due to the introduction of quantization noise that is inherent in the quantization process. Then the conversion of the digital signal back to an analog signal may introduce more inaccuracies to the image signal before the CNN of the Chua et al. patent is able to process the image signal. Consequently, the multiple signal conversions necessitated by the proposed combination may fail to provide highly accurate image analysis results.

It is submitted that the selective combination of the Shams et al. and Chua et al. patents will likely fail to provide high speed, highly accurate image analysis results. Instead, the Examiner appears to be using impermissible hindsight, gleaned from the Applicants' own specification, as motivation to selectively combine disjoint pieces of the prior art to produce the claimed invention. There is simply no proper motivation in the prior art to selectively combine bits and pieces from the two cited prior art references.

Accordingly, independent Claims 20, 42, and 46 are patentable. Their dependent claims, which recite yet further distinguishing features, are also patentable over the prior art and require no further discussion herein.

CONCLUSIONS

In view of the amendments and arguments presented above, and the Examiner's indication of allowable subject matter, it is submitted that all of the claims are patentable. Accordingly, a Notice of Allowance is respectfully requested in due course. Should any minor informalities need to be

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addressed, the Examiner is encouraged to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: MS AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 15th day of August, 2005.

